

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

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| Applicant's or agent's file reference DRCR287 | FOR FURTHER ACTION | | See Form PCT/IPEA/416 |
| International application No. PCT/KR2004/002885 | International filing date(day/month/year) 09 NOVEMBER 2004 (09.11.2004) | Priority date (day/month/year) 12 NOVEMBER 2003 (12.11.2003) | |
| International Patent Classification (IPC) or national classification and IPC E05F 3/06(2006.01)i | | | |
| Applicant SONG, Jang-Woo | | | |

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
3. This report is also accompanied by ANNEXES, comprising:
- a. ☒ (sent to the applicant and to the International Bureau) a total of 5 sheets, as follows:
- ☒ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).
- ☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.
- b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) _____ containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).
4. This report contains indications relating to the following items:
- ☒ Box No. I Basis of the report
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☐ Box No. VIII Certain observations on the international application

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| Date of submission of the demand 09 JUNE 2005 (09.06.2005) | Date of completion of this report 28 FEBRUARY 2006 (28.02.2006) |
| Name and mailing address of the IPEA/KR Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140 | Authorized officer KIM, Hyun Woo Telephone No. 82-42-481-5795 |

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/002885

Box No. 1 Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☒ This report is based on translations from the original language into the following language English, which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☒ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*.
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages _____ as originally filed/furnished
- pages* 1-9 received by this Authority on 09.06.2005
- pages* _____ received by this Authority on _____
- ☒ the claims:
- pages _____ as originally filed/furnished
- pages* _____ as amended (together with any statement) under Article 19
- pages* 10-10/1 received by this Authority on 09.06.2005
- pages* _____ received by this Authority on _____
- ☒ the drawings:
- pages _____ as originally filed/furnished
- pages* 1-14 received by this Authority on 09.06.2005
- pages* _____ received by this Authority on _____
- ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to sequence listing (specify): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(e)).
- ☐ the description, pages _____
- ☐ the claims, Nos. _____
- ☐ the drawings, sheets _____
- ☐ the sequence listing (specify): _____
- ☐ any table(s) related to sequence listing (specify): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/002885

Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

| | | | |
|-------------------------------|--------|------|-----|
| Novelty (N) | Claims | 1-5 | YES |
| | Claims | NONE | NO |
| Inventive step (IS) | Claims | 1-5 | YES |
| | Claims | NONE | NO |
| Industrial applicability (IA) | Claims | 1-5 | YES |
| | Claims | NONE | NO |

2. Citations and explanations (Rule 70.7)

Reference is made to the following documents:

D1: US 6317922 B1 (TRUTH HARDWARE CORP.) 20 November 2001

1. Novelty

Claim 1 of the present application relates to a door closer, wherein a fixing device is formed at both ends of a cylinder: a speed adjustment bolt and a fine speed adjustment bolt are mounted at the edge of the cylinder; a piston, a piston rod, a spring, and a spring guide are mounted in the cylinder; hydraulic oil is filled in the cylinder; and a force adjustment nut is formed.

D1 discloses a door closer, wherein a fixing device is formed at both ends of a cylinder: a speed adjustment bolt is mounted at the edge of the cylinder; and a piston, a piston rod, a spring, and a piston rod fixing member are mounted in the cylinder; and air is filled in the cylinder.

D1 does not include a fine speed adjustment bolt, a spring guide, and a force adjustment nut, which are technical features of claim 1 of the present application.

Therefore, claim 1 is considered to be novel over D1.

Since claims 2-5 refer to claim 1, claims 2-5 are also considered to be novel.

2. Inventive Step

As stated above, claim 1 differs from D1 in the fine speed adjustment bolt, the spring guide, and the force adjustment nut. Said technical features of claim 1 produce effects in preventing the inner wall of a cylinder from being damaged and preventing the spring from being bent. Therefore, claim 1 is considered to involve an inventive step.

Claims 2-5 referring to claim 1 are also considered to involve an inventive step.

Amendment under Article 34 incorporated to Substitute Specification attached to this submission

**TRANSLATION OF ANNEX TO
INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

Remarks attached to Amendments under Article 34

In the specification pages 6-7 (Best Mode for Carrying Out the Invention), applicant has added description about reference numerals *a subsidiary plate 9a* and *subsidiary pin 9b* which are disclosed in Fig. 11. See Replacement Drawing Sheet.

In the claims, applicant has increased the original single claim to five claims so as to properly claim the scope of the invention and emphasize *an additional supporter 8, piston rod 3 having a piston 2 on one end and a male screw 3a on the other end, and a force adjustment nut 7.*

In the drawing, *a subsidiary plate 9a* and *subsidiary pin 9b* which are disclosed on Fig. 11 of the original application but not properly named. A Replacement Sheet is attached hereto.

Specification Amendment begins on page 2.

Claim Amendment begins on page 3.

Drawing Replacement Sheet added to the end of the claim amendment.

Specification Amendment under Article 34

Pages 6-7 of the original international application, please replace the two paragraphs of page 6, line 13 to page 7, line 6 with:

“In the present invention, a subsidiary plate 9a with a subsidiary pin 9b is assembled to a door mounting device 9 installed at a door 10, and a force adjustment nut 7, which is rotatable to right or left side, is assembled to the subsidiary plate 9a so that it can change the position of a piston rod 3 to the door 10 or to a doorframe 11, and a cylinder 1 is assembled to a doorframe mounting device 8 installed at the door frame 11, a surface of the cylinder 1 being provided with hemi-cylindrical shaped protrusions, in which an oil-hole is formed and a speed adjustment bolt is assembled at the end thereof, extending linearly in the longitudinal direction, a piston 2 which forms a hole 2, and a catch rod 2a’, and a spring 5 is mounted in the cylinder 1 and hydraulic oil containing a little amounts of air is filled in the cylinder 1, the piston rod 3 is extending from an inner side to an outer side of the cylinder 1, one end of the piston rod 3 being provided with the piston 2 and the other end thereof being provided with male screw 3a in which minor diameter of an external thread is greater than a diameter of the piston rod 3 so that the piston rod 3 can be moved in the force adjustment nut 7, and the door mounting device 9 including the force adjustment nut 7, subsidiary plate 9a and subsidiary pin 9b, and the doorframe mounting device 8 including the cylinder 1, the piston rod 3 and the male screw 3a, can be assembled and separated from each other by the force adjustment nut 7 provided at the door mounting device 9, and the male screw 3a is an additional supporter. 20a, 20b, 20c, and 20d are oil seals, and 40a is a sliding bearing. The reference numerals 1c, 1d, 1e, and if are oil holes, and 2b is a ball, and 30a, 30b, and 30c are rotation centers. The reference numeral 30 is a connection line of rotation center.”

Claim Amendment to Article 34

Original Claim 1 is cancelled and new claims 1-5 are added in this amendment.

Claim 1. A door closer which is fabricated in a hydraulic or air cylinder shape in its body,

wherein a subsidiary plate 9a with a subsidiary pin 9b is assembled to a door mounting device 9 installed at a door 10, and a force adjustment nut 7, which is rotatable to right or left side, is assembled to the subsidiary plate 9a so that it can change the position of a piston rod 3 to the door 10 or to a doorframe 11;

wherein a cylinder 1 is assembled to a doorframe mounting device 8 installed at the doorframe 11, a surface of the cylinder 1 being provided with hemi-cylindrical shaped protrusions, in which an oil-hole is formed and a speed adjustment bolt is assembled at end thereof, extending linearly in the longitudinal direction, a piston 2, and a spring 5 is mounted in the cylinder 1 and hydraulic oil containing a little amounts of air is filled in the cylinder 1, the piston rod 3 is extending from an inner side to an outer side of the cylinder 1, one end of the piston rod 3 being provided with the piston 2 and the other end thereof being provided with male screw 3a in which minor diameter of an external thread is greater than a diameter of the piston rod 3; and

wherein the door mounting device 9 including the force adjustment nut 7, subsidiary plate 9a and subsidiary pin 9b, and the doorframe mounting device 8 including the cylinder 1, the piston rod 3 and the male screw 3a, can be assembled and separated from each other by the force adjustment nut 7 provided at the door mounting device 9, and the male screw 3a provided at the one end of the piston rod 3.

Claim 2. The door closer of Claim 1, wherein an additional supporter 8a of a rectangular shape can be, if needed, provided at lower surface of the doorframe mounting device 8, a longitudinal and transverse length thereof being identical with those of the lower surface of the doorframe mounting device 8, and holes corresponding to screw holes formed at lower surface of the doorframe mounting device 8 is formed at the additional supporter 8a so as to fix the doorframe mounting device 8 to the doorframe 11, with forming an additional central hole in the supporter 8a for assembling with the doorframe mounting device 8.

Claim 3. The door closer of Claim 2, wherein the additional supporter 8a is made of materials selected from plastic group.

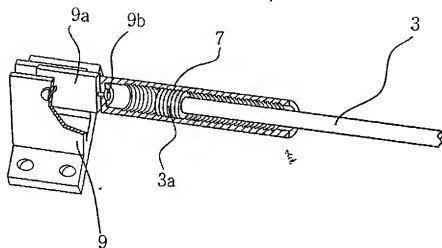
Claim 4. The door closer of Claim 1 or Claim 2, wherein the piston 2 is provided with a hole 2a and is connected to one end of the piston rod 3, an catch rod 2a' being formed at the hole 2a and a ball 2b is received therein, and the male screw 3a is formed or attached to other end of the piston rod 3 so that the piston rod 3 can be moved in the force adjustment nut 7, the minor diameter of an external thread being greater than the diameter of the piston rod 3.

Claim 5. The door closer of Claim 1 or Claim 2, wherein the force adjustment nut 7 is exposed to outside to make it easy to mount and control force, an female screw being formed at inside of the force adjustment nut 7 so that the piston rod 3 can be moved in the force adjustment nut 7, the minor diameter of the internal thread being greater than the diameter of the piston rod 3, and in addition, the force adjustment nut 7 has a cylindrical shape with a big central through-hole extending therethrough, one end of it being blocked by a round plate with a small central through-hole.

Replacement Sheet

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【Fig.11】



【Fig.12】

